

it is broken off at the commencement of the rough surface above the "third" trochanter, where its diameter is 2 inches, that of *M. Major* being 1. In the head of the tibia we are struck with as great a deviation from macropodal form as in the femur; there is no anterior tuberosity prolonged in the plane of the articular surface. That surface is equilateral, measuring $2\frac{7}{8}$ inches on each of its three sides. A broad and high intercondylar ridge slopes gently to the rounded anterior apex of the triangular surface, whence the profile of the bone descends almost vertically for $\frac{3}{8}$ inch to the origin of the broad procnemial ridge; yet the transverse groove below the edge of the hinder-articular surface is as deeply cut as in existing kangaroos. In this characteristic feature, as well as in the depth and breadth of the excavation of the outer facet of the shaft, and in the sharp, longitudinal ridges separating the other facets, the tibia is entirely macropodal; but in the fore and aft contraction of its roundly triangular articulating surface it suggests a tentative departure towards the slow-paced giants of the class.

Of the rest of the remains, two distal ends of left femurs are alone sufficiently well preserved to merit notice. These possess the usual characters of the kangaroo femur. So far as can be estimated, they are of exactly the same size transversely as that of *P. Azael*, but have apparently a far greater length of the condylar surfaces. Besides this they present several minor differences which forbid their identification with the fossil figured by Professor Owen. Into these distinctive features it seems unnecessary to enter. Enough of detail has already been given to render the present communication tedious.

ON THE HABITS OF THE MALLEE HEN, *LEIPOA OCELLATA*.

By K. H. BENNETT.

This singular bird as its trivial name implies, is an inhabitant of the arid dreary Mallee Scrubs that clothe a large area of the western portion of New South Wales, and even larger extents of some of the adjoining colonies, but as my experiences of the bird and its habitat are confined to the former colony, I can speak

with confidence only thus far. About the month of October, the birds (2 only) commence (if new to construct—if old to repair) their huge mound nests. In the former case they select a slight depression ; such as where a stump has been burned out, this they fill with a mass of leaves, fragments of “porcupine grass,” Mallee bark, &c., &c., and in doing this the whole surface of the surrounding ground for many yards is swept perfectly clean. The method of doing this is to go out some distance from the site of the intended nest, and then walking backwards, alternately raking with each of their powerful feet, and assisted by their wings, sweep everything loose to a common centre. In the case of an old nest, they clean out the sand used for covering the eggs the previous year, and should they deem it necessary place more leaves, &c., in the hollow. Should the weather be moist at the time, the work goes on uninterruptedly, but should it be dry, they wait until a passing shower has damped the mass of vegetable deposit, this they then cover with three or four inches of sand, when the female commences the work of depositing her eggs—this she does by laying the egg on the sand covering the leaves, &c., and then leaning backwards grasps the egg in both feet, placing it in an upright position (small end down), then holding it with one foot, she with the other gently rakes some sand around ; and changing feet does the same on the other side until the egg will stand ; it is then covered, as well as the other part of the nest with several inches of sand. And here comes in the immense amount of work the birds have to perform at each subsequent laying for the whole of the sand down to the level of the first egg (until the first layer or tier is completed) has to be removed, and so on with each successive layer ; and as the mound increases in height the labour increases in proportion, for should the weather be dry, as it usually is, the sand runs like so much water, and a person has only to open one of these mounds himself to understand the difficulty the birds have to contend with in keeping the sand from running back. The removal of the sand is effected by the aid of wings and feet, the bird dragging each small quantity thus obtained a sufficient distance to ensure its not running back.

The circumference of the cavity in the centre of the mound in which the eggs are deposited is about three feet, and around the edge of this space the eggs (usually three sometimes four) are placed, this completes the layer ; the whole are then covered with sand to the depth of four or five inches, which is allowed to remain and the second layer is commenced. and so on until the whole (generally four) are completed. The bird lays about twice a-week, thus a long time intervenes between the laying of the first egg and the last, and consequently eggs in all stages, from fresh laid to just on the point of hatching, and young birds, are to be found at the same time.

During the period of incubation the parent birds, as a rule, visit the nest morning and evening every day ; in the earlier stages this is done to repair the damages caused by native dogs and iguanas, who scratch at the nests in the hopes of obtaining the coveted eggs or young, and also to repair the damage often caused by their more destructive biped foes. As an instance of which I may mention that on one occasion I opened a nest about 10 o'clock in the morning, which contained three eggs. I took only one as I knew from its delicate colour that it was quite fresh. I left the nest open, and having occasion to repass it about two hours afterwards to revisit it, I found the bird had in my absence made it up again. Thinking it might be possible that the egg I had taken was not of that morning's laying, and that whilst I was away the bird laid another, I again opened the nest, but there was but the two eggs, On this occasion I opened the mound to a much greater extent, drawing the sand back to a considerable distance and again leaving it open. Shortly before sundown I returned to the nest again and found all damages repaired.

As the process of incubation progresses these visits have an additional motive, viz., that of assisting any young bird out of the superincumbent mass by opening the nest ; but that this is absolutely necessary, so far as the chick is concerned, I do not believe, for on many occasions when opening nests I have found the chick so near the surface that a few minutes more would have effected its liberation unaided, and if it could by its own exertions

come up from a lower layer, it could certainly have passed through the few inches of loose sand between it and the exterior of the mound, and from careful observations on this point I am convinced that the chick can liberate itself. The egg is of large size, consequently the chick is large and possessed of considerable strength; and on emerging from the shell, which is extremely fragile, its natural instincts prompt it to struggle for air and light; its struggles displace the sand, which runs down beneath the bird and thus gradually it gets higher and higher. Its passage through the warm dry sand completely removes any moisture clinging to it on emerging from the shell, and, when at last it reaches the summit of the mound, it is a fully developed bird able to fly, run, and take care of itself, which, in fact, it has to do, for the old bird, having so far conformed to maternal instincts as to assist it in getting out of the nest, now totally ignores its presence; whilst the young one, equally devoid of affectionate instincts, evinces fear of its parent and quickly runs off amongst the dense "porcupine grass," and commences its lonely existence, for lonely this bird decidedly is, leading a solitary life; for, except at the period of incubation, it is very rarely that two are seen together, and when met with quietly feeding its actions are suggestive of melancholy, for it has none of the liveliness that characterises almost all other birds, but stalks along in a solemn manner as if the dreary nature of its surroundings and its solitary life weighed heavily on its spirits. Its note (not often uttered) is a most mournful sound something like that of the bronze winged pigeon but much louder and each note much more prolonged. The food of this bird consists of insects, the seeds and berries of various shrubs, and the tender shoots of plants. In its wild state it is entirely independent of water, but will sometimes drink when domesticated. It is easily domesticated but evinces no intelligence or affection, and its habits and actions are marked by the same cheerlessness and love of solitude as in its wild state. Although I have had a number of them reared together until full grown, yet, when liberated, they would not associate but each go its own way, although so tame that they would take food from a person's hand and allow

themselves to be handled. The mounds are of great size, one I measured a few days since was 37 feet in circumference, and this was by no means an exceptional case. I have seen them much larger.

NOTES AND EXHIBITS.

Mr. Macleay exhibited a specimen of *Dendrolagus Dorianus*, a new species of Tree Kangaroo from Mount Owen Stanley, New Guinea, described by Mr. E. P. Ramsay at the January meeting of the Society. He pointed out that the hair on the body all turned the wrong way.

Mr. Macleay also exhibited some specimens of a Moth, with a fungus upon which their larvæ had fed. He stated that the larvæ were inhabitants of portable cases, like the rest of the *Psychidae*, to which family they no doubt belonged. The genus and species—*Ecinia Scotti* were described and figured by Walker Scott, M.A. in his beautiful but, unfortunately, uncompleted work entitled "*Australian Lepidoptera*" The specimens exhibited (two females) were the only outcome of a large number of the larvæ collected by Sir John Hay, at Nepean Towers, some months ago.

Mr. Macleay also exhibited a very large and beautiful piece of Fire-opal, brought by Mr. F. A. Powell from Queensland.

Mr. F. B. Kyngdon exhibited some specimens of marsh-plants collected by himself and Mr. Whitelegge, at Waterloo.

